

Final Administrative Order on Consent and Response to Comments
Exide Corporation
Laureldale, Pennsylvania

Introduction

On August 2000, the United States Environmental Protection Agency (EPA) issued a proposed Administrative Order on Consent (AOC or Order) to Exide Corporation pursuant to Section 7003 of the Resource Conservation Recovery Act (RCRA), 42 U.S.C. Section 6973. Pursuant to Section 7003(d) of RCRA, the AOC was subject to a public comment period.

This Final Administrative Order on Consent and Response to Comments is being presented by EPA to address concerns and issues raised at the public meeting on September 27, 2000 and during the public comment period regarding the proposed off-site investigation and remediation at the Exide Corporation facility (Facility) in Laureldale, Pennsylvania. All of the comments received have been reviewed carefully by EPA and are addressed in this response document. Since there were no changes to the AOC based on comments received, the AOC will become effective upon receipt of a true and correct copy by Exide.

Summary

The Exide Corporation Site occupies approximately 50 acres of land just north of Reading, Pennsylvania. The Facility began operating as a battery manufacturing plant in the mid-1930s under the ownership of the Bowers Battery Company. General Battery Corporation purchased the facility in 1958, and was itself acquired by Exide in 1987. The Facility currently manufactures and recycles lead batteries. Spent lead-acid batteries are sent to a battery breaker unit where lead, plastic and acid are separated. The recycled lead is smelted and cast into lead-alloy bars to make new battery plates. As a result of approximately 35 years of lead smelter operation prior to the installation of air pollution controls and the advent of the Clean Air Act of 1970, Exide contributed to lead contamination in soil of the surrounding areas of the Facility. Currently, the Exide plant operates subject to air permits issued by the Pennsylvania Department of Environmental Protection's (PADEP) Bureau of Air Quality.

The RCRA Section 7003 AOC requires the Exide Corporation to investigate and remediate off-site lead contamination. As part of the AOC requirements, Exide will collect soil samples in Laureldale Borough and Muhlenberg Township to assess the extent of soil lead concentrations that are above EPA's screening levels. Exide will determine the clean-up levels for lead in soil using EPA approved methods. Each property within the boundary of the determined clean-up area will be sampled for lead in soil. Individual properties that have an average lead exposure above the determined lead clean-up levels will be remediated. As an interim measure, the AOC requires Exide to clean-up nineteen properties adjacent to the facility as directed by a Consent Order and Agreement with PADEP which was issued on May 22, 2000. The clean-up of the nineteen properties was completed in October 2000. In early November 2000 and at EPA's request, Exide tested the soils of an additional twenty-two properties in the northern proximity of the facility. Four of the twenty-two properties require no further corrective action. The remaining 18 properties will be further evaluated pursuant to the AOC. In addition to the AOC,

Exide is conducting an on-site investigation pursuant to the Exide RCRA Corrective Action permit issued by EPA to Exide on November 1988.

Public Participation Activities

A public comment period was set from September 8 through October 23, 2000. A public meeting was held on September 27, 2000 at the Muhlenberg Middle School, 801 E. Bellevue Street, Reading, Pennsylvania, for the community and all other interested parties to hear a description of the AOC and to ask questions. The meeting was attended by a total of 37 people, including representatives of EPA, PADEP, the local government, and citizens. Comments and oral testimony given at the meeting and comments received during the comment period have been considered by EPA and are addressed by EPA in this Response to Comments.

Major Comments and EPA Responses

After extensive review of the public comments, EPA concludes that no modifications to the AOC are necessary. However, many of the concerns raised in the comments will be addressed in the Assessment and Remediation work plans that must be submitted to, and approved by, EPA under the term of the Order. These provisions will include indoor dust sampling for lead and if necessary, indoor remediation for residential properties. Furthermore, the provisions will address agriculture soil where tilling may have transported lead to soil levels deeper than two feet.

Regarding comments received on Exide's potential impact on groundwater, EPA is seeking additional information from PADEP and the Exide Corporation. This additional information will enable EPA to make a comprehensive and accurate determination of any impact to groundwater from soil lead leaching. Our preliminary evaluation is that there are no groundwater impacts from offsite soil contamination. Exide is currently undertaking a groundwater investigation of the Exide Facility pursuant to the RCRA Corrective Action permit.

In response to the many comments, EPA acknowledges the concern surrounding Exide's November 1998 Risk Assessment under the AOC. EPA is requiring Exide to conduct a new risk assessment to define the study areas using EPA-approved risk assessment protocols. All appropriate exposure routes will be evaluated. The new risk assessment is subject to EPA's approval. Additional work that encompasses an ecological assessment and the evaluation of the unnamed tributary to the Bernhart's Creek is not in the scope of the AOC but, rather, may be a component of a final remedy for the Facility to be selected by EPA at a later time under Exide's Corrective Action permit.

Some commentors asked for clarification on how EPA prioritized work in the AOC. Residential areas where there is the potential for children's (7 years old and under) or pregnant women's exposure to soil lead concentrations greater than 1200 parts per million (ppm) will be completed first. Residential areas where no children reside and non-residential areas are not expected to pose an immediate health concern will be addressed in an appropriate and timely manner according to the levels of human health risk. Residential properties that are substantially larger than 0.5 acre will not be assessed as a single property on an "overall" basis, but rather they will be sub-divided into exposure areas (EAs) of 0.5 acre or less. Large non-residential properties

will be sub-divided into a reasonable EA dimension that is subject to EPA's approval. Each EA will be assessed on an individual basis. EAs with elevated average lead exposure will be identified and appropriately addressed as directed by EPA.

Public participation is important to the completion of the investigation and remediation. There will be future opportunities for the public to review and comment on the Assessment and Remediation Work Plans. A public meeting will be held to present the content of the work plans and to respond to any questions that the public may have. The work plans will be available for public review at the following locations:

Muhlenberg Community Library
3612 Kutztown Road
Laureldale, PA 19605
Hours: Mon. & Thurs., 9:00 AM-5:00 PM
Tues. & Wed., 12:00 PM - 8:00 PM
Fri., 11:00 AM - 5:00 PM
Sat., 9:00 AM - 4:00 PM
Contact: Annette Pendleton
Voice: (610) 929-0589

EPA Region III
1650 Arch Street
Philadelphia, PA 19103
Hours: Mon.-Fri., 8:30 AM-4:30 PM
Contact: Khai M. Dao
Voice: (215) 814-5467
Fax: (215) 814-3113
Email: dao.khai@epa.gov

This Response to Comments is a document that provides EPA's responses to the public comments received during the public comment period and will be included in the Administrative Record. Based on the comments received, EPA has determined that the proposed AOC requires no modifications and that it will become effective the date on which Exide receives a true and correct copy of the AOC.

Comments Raised and the Agency's Response

Comments submitted by Mr. and Mrs. Shelly

1. Comment: Properties with lead levels above 400 parts per million (ppm) must be cleaned-up to a level no higher than 400 ppm. This includes all wooded areas, steeped slope areas, and acreage properties.

EPA Response: Under the AOC, the Integrated Uptake Exposure Biokinetic (IUEBK) and EPA Adult Lead Models will be used to determine site-specific clean-up levels for residential and non-residential areas. EPA believes that the calculated clean-up levels from the models, which may be higher or lower than 400 ppm, will be protective of human health and the environment.

Areas that are more difficult to remediate such as wooded and steeped slope areas may call for remedial alternatives. The remedial alternatives are subject to EPA's review and approval and will be protective of human health and the environment. Remedial alternatives may include and are not limited to institutional controls, partial soil removal and practicability consideration. For example, although cutting down trees in wooded

areas to remove contaminated soil may eliminate potential risk, the outcome of the deforestation may not be beneficial to the environment or the community.

2. Comment: Exide should not be expecting property owners to sign restrictions limiting the use of their property. All land must be cleaned-up so that deed restrictions are not required. Owners have huge investments in their property that must be protected. Property owners should be able to expect 100% resale value of their property comparable with similar properties not located in the contamination area.

EPA Response: EPA anticipates that residential properties with elevated lead soil concentrations above the clean-up levels will be remediated to levels such that deed restrictions will not be necessary.

3. Comment: Samples taken to determine lead levels cannot be averaged. This will result in hot spots that will not be addressed; and as a property owner, this is unacceptable.

EPA Response: Exide will conduct soil sampling in accordance with the EPA Soil Screening Guidance. The sampling technique consists of subdividing large residential properties into exposure areas (EAs) of 0.5 acre or less. For residential properties that are 0.5 acre or less, the actual residential lot size will be designated as the EA. With respect to large non-residential properties, the properties will be sub-divided into a reasonable EA size that is subject to EPA's approval. Each EA will then be subdivided into 4 to 6 sub-areas. A discrete sample from each sub-area will be collectively placed into a bowl and mixed to form one composite sample. The procedure will be repeated several times to generate a number of composite samples. By using this sampling technique, the composite samples will represent the average lead exposure for each EA and will not be a numeric average of the discrete samples. EAs with elevated lead exposure will be identified and addressed.

4. Comment: Property owners must have direct input into decisions regarding the clean-up of their land. Owners must be notified when the testing is being done, and it should be the EPA testing, not Exide.

EPA Response: Property owners will have input to the clean-up of their land. Exide will notify and request permission in advance from each property owner before any soil sampling and remediation are to take place.

To properly oversee the work, EPA will collect split samples with Exide at some properties to ensure the validity of the soil analyses. Additional measures to ensure analytical validity include data quality objectives, data quality assessment and data validation.

5. Comment: As the parents of a one-year old, we want a safe environment for our child. There should be no reason why a one-year old cannot go outside and play in their background. The fact that lead contamination exists is not the fault of the property owner,

the clean-up needs to be taken care of swiftly and completely by the accountable party. The time line for clean-up with an estimated completion date of August 2005 is too long.

EPA Response: To ensure that the clean-ups will be protective of both human health and the environment, a reasonable amount of time is needed to conduct a thorough investigation and clean-up. The investigation and clean-up will be implemented in an expeditious and thorough manner. The projected August 2005 completion date is a conservative estimate and clean-up completion may be achieved before August 2005.

EPA is ordering Exide to investigate residential areas first as its highest priority. Thus, properties where families are currently living will be completed first.

Comment submitted by Reading-Muhlenberg Area Vocational-Technical School

1. Comment: From the proposed soil sampling and investigation, it appears that the boundary of the soil sampling stops just outside the school property line. Although the school's property meets the property line of the Lucent Technologies site where there have been elevated detection of lead in soil, will the school be considered part of the soil investigation? If not, we would like to be considered as part of the soil sampling and any subsequent actions.

EPA Response: The school will be included in the study areas. Exide will conduct soil sampling at the school and, based on the soil sample results, EPA will determine whether or not remediation will be required.

Comments submitted on behalf of the Saint Michael's Convent

1. Comment: There is no reference in the Administrative Order on Consent (AOC) to the additional soil and sediment sampling implemented during "Phase III" and "Phase IV" by AGC from 1995-1998. Numerous properties were tested and found to have elevated lead concentration in soil above 400 ppm. Moreover, sediment samples in the unnamed tributary of the Bernhart Creek detected elevated lead concentrations. The exclusion of this information leaves a mis-impression of a much smaller available sample test result population, despite the potential for adverse environmental and human health effects.

EPA Response: EPA responds that despite the lack of references in the AOC to the Phase III and Phase IV sampling, Exide is nevertheless required under the terms of the AOC to delineate the full extent of soil lead contamination. The soil and sediment data from the Phase III and Phase IV sampling will be incorporated into the investigation and based on the additional soil sample results, the extent of the soil lead contamination may increase or decrease from the current study areas.

2. Comment: The unnamed tributary to the Bernhart's Creek does not appear to be within the scope of this order. What about the contaminated sediments of that tributary and the need for natural resource restoration?

EPA Response: The unnamed tributary is not within the scope of the AOC. Sampling of the unnamed tributary is a requirement of Exide's RCRA Corrective Action permit. Remediation/restoration of the tributary will be addressed at a later time as part of the remedy decision under the permit.

3. Comment: Area 1 designated in the AOC does not appear to be fully addressed. Are all properties in Area 1 going to be remediated under the "Interim Remedial Measures Proposal"?

EPA Response: Not all properties in Area 1 are remediated under the initial "Interim Remedial Measures Proposal." Those properties where there is the potential for children's (7 years old and under) or pregnant women's exposure to soil lead concentrations greater than 1200 ppm were addressed in the remedial actions conducted by Exide pursuant to the Consent Order and Agreement with PADEP, and completed in October 2000. Non-residential areas, and residential areas in Area 1 where there are no children at this time, will be addressed in a timely manner once the extent of lead-contaminated soil at concentrations above 400 ppm is determined.

4. Comment: Current evidence suggests that adverse neurological effects are exerted with exposures at blood lead concentrations below 10 ug Pb/dL blood, and the absence of a demonstrated threshold below which no adverse effects are observed. The Center for Disease Control (CDC) has noted that there is no "minimum level" at which lead exposure can safely be assumed to cause no ill effects. Lead exposure should be minimized, and the usage of a 10 ug Pb/dL standard does not necessarily eliminate human health risks.

EPA Response: The summary of the potential adverse health effects associated with lead exposure in the AOC is not intended to delineate all possible effects associated with all possible blood lead levels. The summary notes, correctly, that the 10 ug/dL blood lead level is the CDC recommended standard for increased monitoring. EPA similarly uses a blood lead level of concern of 10 ug/dL.

5. Comment: Use of the mean, rather than the 95% confidence level concentration data, is inconsistent with EPA guidance on estimating exposure concentrations in the evaluation risk.

EPA Response: While the upper 95% confidence level (95 UCL) is a conservative estimate of the average of a data set, and is the concentration term used to represent the reasonable maximum exposure level in EPA risk assessments of most chemical constituents, EPA notes that it is not the correct input for either EPA's Integrated Exposure Uptake Biokinetic (IEUBK) lead model or adult lead model. The average lead concentration represented by the soil composite samples is the correct input for these models.

6. Comment: Exide seeks to use "site specific" inputs to the IEUBK model. Some site-

specific model inputs may be appropriate; however, altering other model inputs on a purportedly “site-specific” basis, such as dietary exposures to lead, would be inappropriate. Even more inappropriate would be any attempt to alter the default geometric standard deviation (GSD) for the Integrated Exposure Uptake Biokinetic (IEUBK) model.

EPA Response: The commentor cites portions of the EPA guidance document for the IEUBK model correctly. It should be noted, however, that the same guidance document includes an Appendix which describes a methodology for adjusting the geometric standard deviation (GSD). Other EPA documents also include information on adjusting the GSD and there are several lead sites for which a site-specific GSD has been used. Site-specific inputs to EPA’s IEUBK and adult lead models may be proposed when supported by sufficient and scientifically defensible information. These proposed site-specific inputs will be reviewed by both EPA’s Region III Office and the national EPA Technical Review Workgroup (TRW) for Lead. No changes to default inputs will be permitted without EPA approval from both Region III and the TRW.

7. Comment: The language in the AOC is interpreted to permit areas of substantial contamination to remain unremediated simply because other areas are less contaminated. Assessment of a single large property on the “overall” basis could result in the diluting down or averaging out of very highly contaminated areas with cleaner areas, such that a calculated property wide average exposure is deemed acceptable even though significant areas within the property contain unacceptably high lead levels. How can the Agency assure the effectiveness of the remedy for larger residential property such as the Convent?

EPA Response: Large residential properties such as the Convent will not be assessed as a single property on an “overall” basis. The soil assessment will be conducted in accordance with the USEPA Soil Screening Guidance. Residential properties that are substantially larger than 0.5 acre, such as the Convent, will be sub-divided into exposure areas (EAs) of 0.5 acre or less. Each EA will be assessed on an individual basis. EAs with elevated average lead exposure will be identified and addressed.

See response to Mr. and Mrs. Shelly’s comment #3 for a more detailed discussion on the soil sampling technique.

8. Comment: Although the lead contamination clearly has damaged natural resources such as the Bernhart Park and Creek, and large wooded areas, the AOC fails to address ecological and environmental risk or harm.

EPA Response: No information was provided by the commentor that suggests that these natural resources have been damaged. Based on EPA’s review of the existing soil data and soil samples that will be collected pursuant to the AOC, EPA will consider the need for an ecological and environmental assessment in habitat areas that may be impacted by soil lead concentrations. If EPA determines that an ecological assessment is necessary, a component of a final remedy for the Facility will be selected by EPA at a later time under

Exide's RCRA Corrective Action permit.

9. Comment: The AOC appears to fail to address impacts to groundwater. There is already evidence of impacts to groundwater, including data from testing of residential wells for total and dissolved lead. The AOC should require a full groundwater evaluation and characterization so that the extent of any contamination, and the threat of contamination, can be fully and accurately evaluated.

EPA Response: EPA acknowledges the commentor's concerns for potential impacts to groundwater. However, the groundwater evidence provided by the commentor is incomplete. EPA is currently compiling and reviewing existing data that include additional groundwater sample results, off-site well locations and construction, and hydrological/soil characteristics from the Pennsylvania Department of Environmental Protection and Exide Corporation. This additional information will enable EPA to make a comprehensive and accurate determination of whether there are impacts to groundwater from soil lead leaching to groundwater or groundwater off-site migration from the Exide facility.

As required under the AOC, Exide will conduct a new risk assessment that will evaluate groundwater contamination and exposure pathways. In the event such impacts are discovered, EPA will assess the need for the provisions of alternative water supplies (including bottled water) to impacted residents, and if necessary and appropriate order Exide to do so. In addition, EPA will order Exide to clean-up the contaminated groundwater.

10. Comment: There should be opportunities for public comment and participation throughout the process, including at the time of submission of central documents such as Assessment Work Plans and Remediation Work Plans. All of these materials should be made available to the public.

EPA Response: There will be opportunities for the public to review and comment on the assessment and remediation work plans. The work plans will be available for review at the Muhlenberg Community Library and the EPA Region III office. A public meeting will be held to present the content of the work plans and to respond to any questions that the public may have. EPA's intention is to establish a meaningful relationship with the public by keeping the public informed on decisions and current activities.

All documents relevant to the investigation and remediation required by the AOC will be included in the Administrative Record, which is available at the Muhlenberg Community Library and the EPA Region III Office.

11. Comment: Paragraph G.4. of the AOC. The standard to be applied here is entirely unclear. Is "human health criteria" the same as the clean-up levels? And does this mean a showing that Exide was not responsible for any contribution of lead to soils which are contaminated above the clean-up level? Or would it permit Exide to refuse to remediate a property which was contaminated to some extent due to lead paint, but which was made

worse by additional lead contributions to soil from Exide operations, and which have caused the lead soil concentrations to exceed “human health criteria”?

EPA Response: The “human health criteria” in Paragraph G.4 refers to clean-up levels established pursuant to the AOC.

EPA recognizes that lead is a common environmental contaminant and can be generated from multiple sources. EPA also recognizes that the risk assessment areas listed in Table 1 of the AOC are based on preliminary data and that the delineation of these areas may be revised once additional data are evaluated by EPA.

Paragraph G.4 of the AOC allows Exide to provide evidence to exclude a given property from the final risk assessment area, subject to EPA approval. Exide cannot “refuse” to remediate any property within the final risk assessment area(s) if that property contains measured soil lead above the EPA-approved final clean-up level.

12. Comment: Paragraph G.6. of the AOC. This paragraph provides that residents will be provided with or directed to information concerning screening for an abatement of lead “no later than implementation of the Remediation Work Plans.” There appears to be no provision for EPA review of this information. The rationale for the time frame is rather opaque. Why no later than implementation of remediation work plans. Why not before?

EPA Response: EPA will review the educational information for the screening and abatement of lead in residential properties before it is disseminated to the public. The phrase “no later” is intended to mean before Exide begins to implement the remediation work plans.

13. Comment: The evaluation of the Convent property under the AOC is not likely to take place for a substantial period of time, despite the existence of a significant volume of available data which show that the Convent property is among the most contaminated property within the study area. Because of the substantial amount of data showing that the contamination on the Convent property exceeds 1200 mg/kg, the evaluation and remediation of the Convent property should be accelerated.

EPA Response: The AOC appropriately requires that Exide address residential areas where there is the potential for children’s (7 years old and under) or pregnant women’s exposure to soil lead concentrations greater than 1200 ppm first. Children’s or pregnant women’s exposure poses the most significant health risk. Residential areas where no children or pregnant women reside, such as the Convent, and non-residential areas are not expected to pose an immediate health concern and will be addressed at a later time in an appropriate and timely manner according to the levels of human health risk.

EPA has spoken with a Convent representative and was told that there are no children currently residing or routinely present at the Convent.

14. Comment: If waste products are to remain in off-site soils to an extent which would impair their full unrestricted use, how will affected property owners be compensated for such impairment? And how can the Agency properly permit such impairment?

EPA Response: If Exide can arrange for land use restrictions with individual property owners, and the overall remedy is protective, EPA will consider the land use restrictions in the review of remediation work plans.

15. Comment: To the extent applicable, we specifically request a response to each and every one of our comments including those comments attached and incorporated hereby.

EPA Response: EPA is responding to comments it received pertaining only to the AOC. Past comments submitted to PADEP that do not pertain to the AOC are not addressed in this document. However, comments received by EPA that are outside the scope of the AOC will nevertheless be included in the Administrative Record for public review.

Comments submitted on behalf of the Saylor's Estate

1. Comment: Why has it taken the United States Environmental Protection Agency ("EPA") over sixteen (16) years to propose a remedial process to address the widespread, offsite lead contamination caused by the Exide facility?

EPA Response: EPA and PADEP agreed in 1992 that EPA would concentrate on the on-site clean-up investigation and that PADEP would evaluate the extent of the off-site contamination. In fact, PADEP entered into a Consent Order in 1993 with Exide to begin the investigation of the surrounding properties within a half-mile radius of the facility.

A four-phase investigation of the off-site contamination was completed in 1998. However, PADEP and Exide could not reach an agreement on how next to proceed. Consequently, EPA decided to use its RCRA Section 7003 authority to negotiate a Consent Order with Exide after discussions with PADEP, Exide, and citizen representatives.

2. Comment: The November 1998 Exide Risk Assessment, prepared by RBR Consulting for Exide, is fatally flawed and should not in any manner be utilized for investigation or remedial assessment of any area affected by Exide. Three very significant errors related to properly characterizing the amount of lead in the soil and available for human contact are already embedded in EPA's apparent "acceptance" of Exide's declaration of "average lead concentrations" for the nine different "Risk Assessment."

EPA Response: EPA did not accept the "average lead concentrations" as the "true" lead soil concentrations in the vicinity of the Exide facility because the methods in which the lead concentrations were averaged were inaccurate. Given that these were the only soil data available at the time, the "average lead concentrations" referenced in the AOC were used to generally define the study areas. Based on the results to be obtained from

additional soil samples, the size of the study areas will be more accurately defined and may be reduced or expanded.

Exide will conduct a new risk assessment to define the study areas using EPA-approved risk assessment protocols. The following measures will ensure that the risk assessment is conducted in an appropriate manner:

- Exide will use appropriate protocols for sampling and delineating the extent of lead contamination.
 - All appropriate exposures routes will be evaluated.
 - Exide will develop appropriate data quality objectives (DQO) for the project.
 - Appropriate sampling methodologies with appropriate quality controls will be used.
 - The new risk assessment is subject to EPA's approval.
- a. Comment: The Risk Assessment averaged the measured soil lead collected at 0-3, 3-10 and 10-18 inch intervals. This average dilutes the significantly higher lead levels in the top few inches of the surface soil and dust where the lead actually accumulates from air deposition with the deeper and cleaner sub soils. Why is EPA allowing averaging over 18 inches of soil?

EPA Response: Surface soil samples will be taken from the 0-3 inch horizon and will not be averaged over 18 inches of soil.

- b. Comment: Exide combines two data sets from two different analytic methods, the XRF and the ICP methods when declaring the average lead levels. Combining the two data sets without properly adjusting for the fact that the XRF method understates actual lead amount present at higher lead to soil concentrations has likely resulted in understating the actual soil lead levels. While it is true that X-ray fluorescence and Inductively Coupled Plasma (ICP) data can correlate in mid-range results, they do not correlate well at the tails of the concentration ranges. Therefore, for consistency one method should be employed and that method should be the ICP method for lead soil analysis.

EPA Response: A correction factor based on the linear regression of the XRF and ICP results will be incorporated to adjust for possible understated values by the XRF technique. This method is accepted by EPA and has proven reliable at numerous Superfund and RCRA corrective action sites for soil lead screening.

- c. Comment: The Reasonable Maximum Exposure (RME) and the 95% Upper Confidence Level (UCL) represent the most conservative possible analysis or worse-case for residential and nonresidential receptors. Instead of using the above methods, Exide is only required to use the average lead concentration values, which are much less conservative and do not present the worse case scenario of exposure. Using the average lead concentration significantly understates the lead levels present in the soil. Will EPA correct this error?

EPA Response: The actual soil sample results, and not the average values, will be used to delineate the study areas. The delineation involves geostatistics and kriging that incorporate the soil sample results to outline areas that are not likely to exceed 400 parts per million (ppm) for lead in soil. Properties within the study areas that exceed 400 ppm will be sampled on an individual basis in accordance to EPA Soil Screening Guidance to determine the average lead exposure.

See response to Mr. and Mrs. Shelly's comment # 3 for a more detailed discussion on the soil sampling technique.

See response to St. Michael's Convent comment # 5 for use of average lead exposure.

3. Comment: The "Index to the Administrative Record" for this draft AOC does not contain Dr. Barsotti's January 29, 1999 report or any of the Estate's correspondence with EPA Region III. Will EPA include Dr. Barsotti's report and subsequent Estate correspondence historically directed to EPA in the Administrative Record?

EPA Response: Dr. Barsotti's report and subsequent Estate correspondence to EPA have been added into the Administrative Record, which is available to the public at the Muhlenberg Community Library and the EPA Region III Office.

4. Comment: Will EPA establish a meaningful and ongoing public participation process related to all aspects of this remediation? The public deserves full access to all remedial decision making.

EPA Response: Yes. See response to St. Michael's Convent comment #10.

5. Comment: Will EPA modify the text of VI.E.1 so that the implication that "the areas and properties within each Risk Assessment Area listed in Section IV.K, Table 1 (hereinafter referred to as "Table 1")" may only be diminished in size will be corrected? The areas subject to remediation should, at least in theory, be clearly susceptible to enlargement as well as diminishment.

EPA Response: The referenced study areas in the AOC are intended to provide a general characterization of the soil investigation areas and the text cited does not need to be modified. The delineation of the study areas where total lead concentration in soil is above 400 ppm is contingent on the additional soil samples, which may increase or decrease the size of the overall study areas.

6. Comment: Assessment of a single large property on the "overall" basis could result in the diluting down or averaging out of very highly contaminated areas with cleaner areas, such that a calculated property wide average exposure is deemed acceptable even though significant areas within the property contain unacceptably high lead levels. Will EPA

require that the subdivision potential of larger properties and the accessibility and use of all property components or areas be fully recognized?

EPA Response: EPA is not assessing a single large residential property on a “overall” basis. See response to St. Michael’s Convent comment # 7.

7. Comment: Data from structures on the Estate properties established that the indoor environment has been impacted from non-paint related lead dust and was caused by Exide/GBC. This exposure pathway should be characterized. Why has not EPA mandated the remediation of indoor lead contamination caused by Exide?

EPA Response: EPA acknowledges the indoor lead dust data submitted by the Saylor’s Estate. Additional indoor dust samples were collected by Exide from several residential homes during Exide’s implementation of the “Interim Remedial Measures Proposal” required by PADEP and incorporated in the AOC. The supplementary indoor lead data from the residents will be submitted to EPA shortly. Exide expects to gather additional data on indoor dust lead levels in support of the IEUBK model. EPA has directed Exide to focus this sampling initially in homes where one or more children under 7 years old or pregnant women reside. The additional data will enable EPA to determine whether indoor dust sampling and remediation will be necessary on a broader basis.

As a rule, EPA is reluctant to extend investigations into people’s homes to avoid unnecessary disruption and anxiety to homeowners. However, if a close examination of data generated in support of the IEUBK model and the Saylor data indicate an indoor dust lead problem, EPA will require Exide to conduct additional investigation and to remediate indoor lead contamination caused by Exide.

8. Comment: The Estate’s property is immediately downstream of the reservoir and the Estate wants assurances that its streams, its sediments and related wildlife will not be further contaminated by the future migration of lead from Bernhart’s Reservoir. Will EPA require the adequate testing of Bernhart Reservoir sediments and if necessary implement remediation?

EPA Response: No evidence was provided by the commentor that indicates that the streams, sediments and related wildlife are contaminated by lead migration from the Bernhart’s Reservoir. To assume the contamination exists without sufficient evidence is premature.

EPA will evaluate risks associated with all appropriate exposure routes and will determine the need for an ecological and environmental evaluation at Bernhart Park. If EPA determines that an ecological assessment is necessary, a component of a final remedy for the Facility will be selected by EPA at a later time under Exide’s RCRA Corrective Action permit. With regard to the Bernhart Reservoir sediments, either EPA, PADEP or Exide will sample the sediment for lead. Based on the results of the sediment samples, EPA will determine whether or not remediation will be required.

9. Comment: Why does not EPA declare a standard or goal for at least the screening process?

EPA Response: EPA has established a soil screening standard of 400 ppm to delineate the extent of soil lead concentrations in the vicinity of the Exide facility.

10. Comment: EPA must ensure that the Estate's residences, the grist mill and associated yard area be included as part of the "Interim Remedial Measures Proposal", since the Estate's residential buildings are demonstrably in residential use and are in the same contaminated condition as the adjacent residences now undergoing remediation.

EPA Response: Current remedial activities address residential properties where there is the potential for children's exposure to soil lead concentrations greater than 1200 ppm.

Additional information was submitted by the commentor in a letter dated January 12, 2001. The letter states that one or more pre-school children are often present at one of the three rental units. EPA contacted the resident and was informed that two of the three children ages 3 and 7 visit the home once or twice a week for approximately 30 minutes to an hour. The third child, 2 years old, visits the home approximately once a month for the same duration. Because of the length of the children's visits, the potential exposure to lead in soil and indoor lead dust is much less than would be experienced by a child residing permanently at this location and is not expected to pose an immediate health concern. As a precautionary measure, EPA recommended to the resident several ways (e.g., parental supervision, frequent house dusting, periodic vacuuming, hand washing) to minimize indoor lead dust and soil lead exposures.

The letter also states that three young adults reside in the Estate rental unit closest to the Exide facility. EPA left a message with the residents to inform them if they have any questions regarding indoor dust and soil lead exposures that they should contact EPA. EPA has not received an inquiry by the residents. Although the ages of the three young adults are not known, it is reasonable to conclude from the term "young adults" that the three young adults are older than 7 years old. Therefore, this residential property is not included as part of the "Interim Remedial Measures Proposal." The main residence, which is the third rental unit stated in the letter, is currently vacant.

Although the three rental units of the Estate are not included in the "Interim Remedial Measures Proposal" they will nevertheless be evaluated by Exide pursuant to the AOC.

11. Comment: It appears that EPA expects off-site remediation to require 5 full years to implement. Schedules for remedial activities should be shorter and more clearly set forth in the Administrative Order of Consent.

EPA Response: See response to Mr. and Mrs. Shelly's comment #5.

12. Comment: To determine the horizontal impacts of lead in surface soil, the most shallow practicable (e.g., 0-3 or 0-6 inches below ground surface) should be taken for lead analysis. Additional sampling beyond this depth is required (to 15 feet below ground surface per Pennsylvania Act 2) for residential land use. This is particularly relevant where soil disturbances from tilling has occurred. In addition, the surface and near surface sample analysis should also be evaluated for soil to groundwater exposure pathway.

EPA Response: Surface soil samples will be collected from the 0-3 inch horizon where typically the highest concentrations are detected. The lower depths will be addressed during the soil removal. The initial removal will address the first 12-18 inch horizon and to ensure that the initial removal meets the clean-up levels, confirmatory soil samples will be collected. If the confirmatory samples exceed the clean-up levels, an additional 6 inch horizon will be removed until the clean-up levels are achieved.

Appropriate sampling protocols for areas where the soil has been tilled, which may have transported the lead deeper into the soil, will be incorporated in the work plans Exide will be submitting to EPA. The sampling protocols will address potential residential soil exposures at lower depths. Therefore, this protocol uses both characterization of the extent (depth) of contamination and demonstration of attainment through sampling in a manner consistent with Pennsylvania Act 2.

13. Comment: Because of heterogeneity of soil matrix and likely lead impacts as well as the undetermined future subdivision of the property, compositing of surface and near surface samples (horizontal or vertical) should not be performed.

EPA Response: Under EPA's Soil Screening Guidance, composite sampling is an approved and acceptable method to assess the horizontal extent of lead contamination in soil. EPA has not proposed "vertical" composite sampling nor is such sampling described in the Soil Screening Guidance.

See response to Mr. and Mrs. Shelly's comment #3 for a discussion on the soil sampling technique.

14. Comment: Since the soil sampling data will be used to support decisions about the need for further investigation or remediation, the data must be sufficient in quantity and quality.

EPA Response: The AOC requires that Exide obtain a sufficient quantity and quality of soil data. According to the EPA Soil Screening Guidance, a sufficient number of samples and quality standards are necessary to assure that the areas are fully and accurately assessed.

15. Comment: The Estate conducted additional sampling of its tilled farm fields and the more distant residence at 408 Crystal Rock Road. The data establishes lead contamination at lower depths in these areas.

EPA Response: See response to the Saylor's Estate comment #12.

16. Comment: The commentor makes the point that the Estate is willing to cooperate with any timely EPA remediation of its property so long as the remediation is fully protective of the complete, unrestricted use of the property.

EPA Response: EPA acknowledges the Estate's comment. See response to Lucent Technologies comment #3.

Comments submitted on behalf of Lucent Technologies

1. Comment: The study areas defined in the Exide Risk Assessment and the Agreement Order of Consent (AOC) do not include all areas of contamination from the Exide facility. The delineated study areas do not provide a full characterization of the horizontal extent of lead contamination resulting from Exide's facility.

EPA Response: See response to the Saylor's Estate comment #5.

2. Comment: The AOC must not allow Exide to use non-residential exposure assumptions without the consent of the affected landowners.

EPA Response: Paragraph VI.F.1. of the Order requires Exide to submit a work plan to EPA for review and approval. The work plan may include residential exposure scenarios and nonresidential scenarios with appropriate property-specific information. The Order allows for the submission of non-residential exposure scenarios when developing the work plan but it does not require it.

The Order requires that Exide submit to EPA for approval a work plan for remediation of each property identified in the Order. If a given work plan proposes a nonresidential clean-up, the work plan must establish how such a remedy will be protective before EPA will approve it. By this Order, EPA is not requiring Lucent, nor any other property owner, to accept a limitation on the use of its property. If Exide proposes to clean-up a property to a level that requires a limitation or restriction on the use of the property in order to be protective, then Exide has the responsibility to secure such a restriction from the property owner and submit this process to EPA in a work plan.

3. Comment: RCRA does not allow EPA to approve a clean-up that imposes land use restrictions on innocent landowners without also requiring compensation for those landowners.

EPA Response: RCRA does not specifically address the issue of compensation of landowners for the imposition of land use restrictions on their properties. It may, however, be appropriate to consider compensating a property owner for such a restriction in the context of selection of a remedy. EPA has not preauthorized any clean-ups that impose land use restrictions on innocent landowners. It is Exide's option to offer

compensation to property owners for any restrictions and submit to EPA for approval remediation work plans that include such restrictions. Exide will be required to clean-up each of the identified properties to a level that is protective, given a particular property's current or reasonably future use.

See the response to the preceding question for further discussion on the imposition of land use restrictions.

4. Comment: The AOC fails to include opportunities for public participation and comments. The AOC proposes that Exide will perform additional site assessments, prepare a work plan and implement a remedy with no further public input.

EPA Response: See response to St. Michael's Convent comment #10.

5. Comment: The AOC may result in an unconstitutional taking of private property.

EPA Response: EPA disagrees that a clean-up required under this AOC would constitute a "taking of private property." EPA believes this comment to be both hypothetical and speculative. Any clean-up of contaminated property offers protection for current use and for reasonably anticipated future use. Such clean-up can only enhance the property, even if the clean-up level requires a use restriction is placed on the property. A characterization of a partial clean-up as an unconstitutional taking is unreasonable. Notwithstanding the unreasonableness of the "takings" characterization, EPA will not approve a work plan that is not deemed by EPA to be protective. When determining whether a proposed remedy is protective, EPA will consider current use and reasonable future use of the property.

6. Comment: In numerous lead contamination cases nationwide, EPA has required polluters to remediate offsite properties to 500 mg/kg. The proposed clean-up approach is inconsistent with EPA precedent for battery recycling and lead smelting facility sites and is not protective of groundwater.

EPA Response: The commentor did not provide references that suggest an inconsistent approach from other battery recycling and lead smelting facility sites. The clean-up approach in this AOC is based on site-specific parameters that will determine the clean-up levels. The clean-up levels may be higher or lower than 500 ppm and may differ from other lead contaminated sites. The final clean-up levels will be protective of human health and the environment and will be developed in a manner consistent with current EPA policy and scientific judgement through Region III's consultation with EPA national experts.

See response to St. Michael's Convent comment #9 with regard to groundwater.

7. Comment: The Risk Assessment exhibits numerous technical deficiencies and Lucent is concerned that any future risk assessment performed by Exide under the AOC will have similar errors.

EPA Response: See response to the Saylor's Estate comment #2.

8. Comment: The AOC should not defer remedial action on the most highly-contaminated areas that may not be residential.

EPA Response: EPA's first priority is to address residential areas where there is a greater potential for human exposures to lead contaminated soil. Non-residential areas where there is a lesser degree of human exposures to lead contaminated soil and despite the elevated lead soil concentrations, will be addressed in a timely manner once all residential areas are remediated.

Comments submitted on behalf of the City of Reading

1. Comment: It is relevant to point out the erroneous information provided in the Risk Assessment.

- Methods used to determine exposure and risk were neither consistent with the current state of scientific knowledge regarding lead exposures nor compatible with current risk assessment practice and guidance.
- The potential predicted impact on the public health of the community remains unanswered.
- Conclusions and recommendations based on the Exide Risk Assessment are questionable and under estimate the impact to public health and the environment.

EPA Response: The major problems identified in the Exide Risk Assessment by Harding ESE are acknowledged by EPA. Under the AOC, Exide is required to prepare a new risk assessment for the study areas, which follows EPA protocols, uses EPA lead models and is subject to EPA approval.

See response to the Saylor's Estate comment #2 for further details regarding the Exide Risk Assessment.

2. Comment: In the AOC, EPA does not stress the importance of obtaining and separately analyzing the shallowest depth practical. Combining results for various intervals from 0-2 feet would dilute the lead deposited from the air, which is generally retained in the upper 1-2 inches of undisturbed soil. This procedure must be avoided in future assessments.

EPA Response: See response to the Saylor's Estate comment #2.

3. Comment: Alternatively, lead deposited on surface soil is redistributed to lower depths when disturbed by various activities including cultivation. In this circumstance, evaluation of the lower depths would be more appropriate for farmers. However, neither exposure to farmer nor lead concentration at depth was evaluated in Exide Risk Assessment for areas being farmed currently. This must be corrected in the future assessment.

EPA Response: See response to the Saylor's Estate comment #12.

4. Comment: Two different analytical methods, X-ray fluorescence (XRF) and Inductively Coupled Plasma (ICP) Atomic Emission Spectroscopy, were used to analyze lead in soil. Combining data from different analytical methods is problematic and introduces additional uncertainty and interpretative burdens in the risk assessment.

EPA Response: See response to the Saylor's Estate comment #2.

5. Comment: The potential of lead leaching from the soil to the groundwater was not appropriately evaluated in the Exide Risk Assessment as required by PA Act 2 and EPA. EPA should require Exide to adequately assess this exposure pathway, however, no mention of this exposure pathway is made in the AOC.

EPA Response: See response to St. Michael's Convent comment #9.

Exide will conduct a new risk assessment that will adequately assess the groundwater exposure pathway. The new risk assessment will be subject to EPA's approval.

6. Comment: Eliminating home grown produce, as a potential site-specific exposure source for residential receptors is premature. EPA should ensure that this exposure pathway be assessed by the site-specific soil-to-plant uptake kinetics for incorporation into the IEUBK model.

EPA Response: EPA will evaluate risks associated with all appropriate exposure routes. Protocols for the evaluation will be included in the EPA-approved work plans.

7. Comment: EPA does not mention ecological considerations or natural resource damages in the AOC. This is particularly relevant in light of the source (potentially high bioavailability), the wide area of airborne distribution of lead and the nearby natural resources of Bernhart Park. EPA has required no assessment of the potential impact of lead on the vegetative resources, the terrestrial foodweb, sediment and surface water and related aquatic organisms.

EPA Response: To assert that there have been damages to natural resources without evidence by the commentor is premature. EPA will evaluate risks associated with all appropriate exposure routes and will determine the need for an ecological and environmental evaluation at Bernhart Park. If EPA determines that an ecological assessment is necessary, a component of a final remedy for the Facility will be selected by EPA at a later time under Exide's Corrective Action permit.

Declaration

After consideration of the comments received, EPA has determined that the terms and

conditions of the Order are appropriate, and are protective of human health and the environment. The Final Administrative Order on Consent (AOC) will become effective without modification, the date upon which Exide receives a true and correct copy of the AOC.

_____ EPA Acting Regional Administrator

_____ Date